

W6IFE San Bernardino Microwave Society Newsletter

President Chip Angle N6CA 25309 Andreo Lomita, CA 90717 310-539-5395 chip@anglelinear.com

VP Joe Saddler WA6PAZ 13909 Fidler Bellflower, CA 90706 310-867-3294

Recording Sec Eric Fort KD6GLP PO Box 42 Etiwanda, CA 91739 909-899-3092

**Corresponding Sec Phil Biles K6COY 446 Colorado St. Anaheim, CA 92801 714-527-3632
philbiles@worldnet.net**

**Treasurer Dick Kolbly K6HIJ 26335 Community Barstow, CA 92311 760-253-2477
70541.2312@compuserve.com**

Editor Bill Burns WA6QYR 247 Rebel Rd Ridgecrest, CA 93555 760-375-8566 bburns@ridgecrest.ca.us

ARRL interface Frank Kelly WB6CWN 1111 Rancho Conejo Blvd. #501 Newbury Park, CA 91320 805-499-8047 fk@event1.com

FCC interface Dave Laag K6OW 11614 Indian St. Moreno Valley, CA 92557 909-924-1517

**W6IFE license trustee Ed Munn W6OYJ 6255 Radcliffe Dr. San Diego, CA 92122 619-453-4563
75353.1255@compuserve.com**

The 2 **October 1997** meeting tech talk will be Dick, K6HIJ providing a primer on noise, its use as a calibration signal and its implications on rig performance. SBMS meets at the American Legion Hall 1024 Main Street (south of the 91 freeway) in Corona, CA at 1930 hours local time.

Last meeting had Dave, K6OW talk about "beginner's microwave". Thanks Dave. Welcome to new member Paul Gordon N6LL of Pasadena. VP Joe, WA6PAZ proposed a goal of getting 10 new member stations on the air in the next year. Bob, W6SYA copied the Heaps 2 Ghz beacon message and received certificate number 11. 24 people present.

Ken Halford, WB6DTA 2901 Joaquin Burbank, CA 91504 is having having elmer operations for those interested in microwave. They meet 3rd wed of the month 6:00 to 10:00 pm. Talk in 144.200 Mhz SSB.

1997 ARRL SW Div. Convention-- SBMS sponsored a hospitality suite in the Holiday Inn on the 11th floor. this room had a balcony where the radio equipment could be set up with the antennas positioned in a safe manner while transmitting. Dick, WB6DNX was the main host demonstrating 2 Ghz narrowband, 10 Ghz wideband, and 24 Ghz wideband equipment. Al, K6LJM displayed ATV equipment (2 Ghz transmit/ 3 Ghz receive). Dick was able to reliably hear the Heaps Peak 2 ghz beacon even with a small dipole antenna. The message could easily be copied with a 1 foot dish and casual listening. Dick also demonstrated that talking in on the beacon control channel modulated the beacon with audio. Dick used his 10 Ghz wideband system to receive the N6CA Palos Verdes beacon with a newly constructed WA6EXV design waterpipe feed on a 3 ft dish. Most of the time the P-V beacon was heard by panning the San Bernardino mountains to the north and listening for a bounce coming from the western beacon. Al originated video from the hospitality suite and sent it on 2 Ghz to the Heaps Peak video translator. The translator in turn provided Convention video or Heaps Pk tower camera, or other amateur video.

The video quality was excellent. About 100 guests visited the hospitality suite in either Friday afternoon, or during the day on Saturday. About half of these requested a sample copy of the SBMS newsletter. Ed, W6OYJ was out and a bout with a 10 Ghz mobile rig with Omni antenna. Several contacts were made with WB6DNX on SSB or narrowband FM. Best results were on SSB. Dave, K6OW spoke to a group of 36 interested amateurs on "Introduction to Amateur Microwave and the SBMS". This was a formal technical discussion and was one of the actual convention programs. Following Dave was Joe, WA6PAZ speaking to a group of 43 on "The quickest way to get on the air on amateur microwave". It was unfortunate that the tech talk rooms were only big enough for about 30 people normally since there was a larger interest in some of the topics. SBMS used a booth in the convention floor to point attendees to the hospitality suite. The booth also contained some display materials and SBMS literature. The booth was manned at various times by SBMS members. A special thanks to those who helped at the convention hospitality suite, the tech talks and the booth. A partial list of those who helped were: WB6DNX, W6OYJ, K6LJM, N6LL, W6KVC, WA6PAZ, W6QC, K6ODV, KD6GLP, KN6TD, and K6ML. Thanks again to the helpers. On a side note- Al, K6LJM was able to see the forest fire through the Heaps Pk camera and determined it was in the mountain area where he lived. Needless to say, his display was removed early so he could get home. During the evening the flames could be seen from the hospitality suite window some 20 miles away. Much later Al reported the fire had reached with in 4 blocks of his house in Running Springs. Several homes were destroyed before the fire was stopped. -thanks K6OW.

Scheduling

6 Nov. tech talk Bill, WA6QYR, Apollo listening

4 Dec. tech talk TBD.

1 Jan. tech talk TBD.

5 Feb. tech talk TBD.

"Wants and Gots for sale"

Want- Dish for 5 Ghz- Ed Diyorio 909-689-9026.

Want - 10 Ghz TWT, 24 Ghz head for HP432 pwr mtr- Doug K6JEY 562-424-3737

Got- antenna rotator for 6 ft + dish. Weighs 350# you haul Ed W6OYJ 619-453-4563

Got- 10 Mhz dual trace Heath Kit scope Eric KD6GLP 909-623-6433 x 27

Second weekend of ARRL 10 Ghz and Up contest. There were a number of rovers out working many stations this time. Ed, W6OYJ roamed the high desert sites. He had a roof mounted Omni (wg slot) antenna to operate the 0.3 watt 10 GHz SSB/CW from his pickup/ camper. The 24 Ghz rig was a 12 inch dish system with either 5 milliwatts or 100? milliwatts, depending on the frequency. Chuck, WA6EXV operated 10 and 24 Ghz from DM15 and 14 before arriving at Heaps Pk DM14KF for Sunday. Robin, WA6CDR was in the CA central valley (DM05/6, CM96/7) on both days with a portable 10 Ghz station. Robin made 7 stops Saturday and 8 on Sunday with some 12 contacts each time. Robin benefited from both northern and southern CA mountain peak and home stations for long distant contacts on each of his stops. Heaps Pk had N6CA, K6OW, WA6QYR, and WB6DNX on site all weekend with both 10 Ghz wide and narrowband rigs and 24 Ghz WBFM rigs. WA6EXV, WA6CGR, KE6BAA, AC6NG, W6SYA, and WA6JBZ stopped by for contacts from Heaps.. There should be some large scores coming out of this contest. It was rumored that northern CA had five 24 Ghz SSB stations out this time. Thanks to all who were out using the amateur microwave bands.

GPS resources on the internet Tue, 26 Aug. 1997

Where is this resources list on the web?

* <http://www.bridge.de/~tom/mini-FAQ.L.htm>

How else can I get this web resources list?

- * e-mail only the word "gps-faq1" to ftp@atdbbs.com

Where can I find out more about...

...How a GPS system (NavStar, GLONASS, etc) works?

- * <http://galaxy.einet.net/editors/john-beadles/introgps.htm>

- * <http://vancouver-webpages.com/pub/peter/gpswork.txt>

- * <ftp://sundae.triumf.ca/pub/peter/gpswork.txt>

- * <http://vancouver-webpages.com/pub/peter/gpsfaq.txt>

- * <ftp://sundae.triumf.ca/pub/peter/gpsfaq.html>

- * Differential GPS (DGPS):

- + <http://www.csi-dgps.com/gbl.htm>

- + <http://www.starlinkdgps.com/>

- * NavStar:

- + <http://www.navcen.uscg.mil/gps/ggeninfo/>

- + <http://www.utexas.edu/depts/grg/gcraft/notes/gps/gps.html>

- + <http://www.laafb.af.mil/SMC/CZ/homepage/>

- + <http://milhouse.jpl.nasa.gov/>

- * GLONASS:

- + <http://www.rssi.ru/SFCSIC/glonass.html>

...A particular mapping system (datum)?

- * <http://www.utexas.edu/depts/grg/gcraft/notes/datum/datum.html>

- * <http://164.214.2.59/geospatial/products/GandG/GandG.html>

- * <http://164.214.2.59/publications/guides/MADTRAN/index.html>

- * <http://164.214.2.59/geospatial/products/GandG/sathtml/home.html>

...Which the SVs (satellite vehicles) are visible right now?

- * <http://tycho.usno.navy.mil/gps-altaz.html>

- * <http://satnav.atc.ll.mit.edu/java/SVOverlay/SVOverlay.html>

- * <http://satnav.atc.ll.mit.edu/java/Predictor/Predictor.html>

- * <http://sirius.chinalake.navy.mil/cgi-bin/satpred-query>

* <http://www.cnde.iastate.edu/staff/swormley/gps/satellites.html>

...The accuracy of GPS systems?

* <http://satnav.atc.ll.mit.edu/>

* <http://satnav.atc.ll.mit.edu/gps/images/gps-scat.gif>

* http://www.cnde.iastate.edu/staff/swormley/gps/check_sa.html

* <http://www.erols.com/dlwilson/gps.html>

* <http://www.ualberta.ca/~norris/navigation/GPS/PlotSA.html>

...calculating distances on a sphere or ellipse?

* <http://www.best.com/~williams/avform.htm>

* <http://www.best.com/~williams/gccalc.htm>

...orbital models?

* <http://dspace.dial.pipex.com/town/plaza/he13/orbmot.htm>

...the exact time?

* <http://www.blrdoc.gov/timefreq/javaclock.htm> Added: 20 Aug

* <http://www.cnde.iastate.edu/time.html> Added: 20 Aug

...Manufacturers of GPS receivers?

* <http://www.eaglegps.com/> (Eagle)

* <http://www.garmin.com/> (Garmin)

* <http://www.lowe.co.uk/> (Lowe)

* <http://www.lowrance.com/> (Lowrance)

* <http://www.alloutdoors.com/magellan/> (Magellan)

* <http://www.cacd.rockwell.com/> (Collins)

* <http://www.nb.rockwell.com/> (RSS)

* <http://www.rockwell.com/> (Rockwell)

* <http://www.trimble.com/> (Trimble)

* <http://gauss.gge.unb.ca/manufact.htm> (others)

...A particular GPS receiver?

* Garmin 12XL:

+ <http://www.bridge.de/~tom/garmin.htm>

* Garmin IIPlus:

+ <http://www.bridge.de/~tom/gps2plus.htm>

* Garmin Xceivers (incl. 12XL/45XL/45/38/II):

+ <http://www.eskimo.com/~klah/g45faq.txt>

+ <http://vancouver-webpages.com/pub/peter/g45faq.txt>

+ <ftp://sundae.triumf.ca/pub/peter/g45faq.html>

...software for GPS receivers?

* <http://ourworld.compuserve.com/homepages/rimmer/waypoint.htm>

(Waypoint)

* <http://www.fugawi.com/> (Fugawi)

* <http://www.rmstek.com/> (Vista)

* <http://www.maincourse.com/> (NavMaster)

* <http://www.gpss.co.uk/> (GPSS)

* <http://www.anali.demon.co.uk/> (Anali)

* <http://www.gpspro.com/> (GPSPro)

* <http://www.csn.net/~lwjames/GPSPRO.html> (GPSPro)

* <http://mayko.com/xmap/> (XMap)

* <http://www.netcore.com.au/~biochem/4wgpslg.html> (4WGPSLog)

* <http://www.stellarnav.com/mapsite.htm> (MapSite)

* <http://www.navcomp.com/software.htm> (RasTrac)

* <http://ourworld.compuserve.com:80/homepages/wingps/> (WingPS)

* <http://www.nobeltec.com/> (NavTrek)

* <http://www.lognav.com/> (LogNav)

* <http://www.blkbox.com/~hub/gpsdb.html> (GPSdb) Added: 22 Aug

* <http://vancouver-webpages.com/pub/peter/mapprogs.txt>

* <ftp://sundae.triumf.ca/pub/peter/mapprogs.txt>

* <http://vancouver-webpages.com/pub/peter/index.html>

* <ftp://sundae.triumf.ca/pub/peter/index.html>

Sellers of GPS products:

- * <http://www.csn.net/~lwjames/> (James and Assoc.)
- * <http://www.commsys.com/> (Comm Systems Intermountain)
- * <http://www.navtechgps.com/> (NavTech)
- * <http://www.unibase.com/fps/homepage.html> (First Pacific Software)
- * <http://users.iafrica.com/k/ke/keithp/gps/> (Keith Pickersgill)
- * <http://www.tdc.co.uk/gps.htm> (TDC)
- * <http://www.geocities.com/Yosemite/2476/pfrancly.htm> ("Purple" cables)

Try these locations for more information:

- * <http://www.gpsy.com/gpsinfo/>
- * <http://www.eskimo.com/~archer/gps.html>
- * <http://sirius.chinalake.navy.mil/homepage.html>
- * <http://www.cnde.iastate.edu/gps.html>
- * <http://www.eskimo.com/~klah/>
- * <http://vancouver-webpages.com/pub/peter/index.html>
- * <ftp://sundae.triumf.ca/pub/peter/index.html>
- * <ftp://sundae.triumf.ca/pub/peter/nicad.faq>
- * <http://ourworld.compuserve.com/homepages/simontaylor>
- * <http://callisto.worldonline.nl/~samsvl/> Added: 20 Aug

thanks Frank, WB6CWN

ARLB049 RF exposure update. The FCC has revised the power level thresholds to trigger a routine Amateur Radio station RF exposure evaluation, and the changes will be welcome news for most hams. When the FCC first decreed a year ago that ham radio stations would have to comply with RF exposure guidelines, it set a 50-W threshold level. The updated guidelines, announced August 25, increase that threshold level on all HF bands except 10 meters, where it remains at 50 W. The FCC made no changes

in the RF exposure limits it announced last year. The new RF safety guidelines are scheduled to become effective January 1, 1998, for Amateur Radio stations. The FCC went along in part with a request by the ARRL to establish a sliding scale for threshold levels, depending upon frequency. The revised thresholds are 500 W for 160 through 40 meters, 425 W on 30 meters (where the maximum permissible power is 200 W), 225 W on 20 meters, 125 W on 17 meters, 100 W on 15 meters, 75 W on 12 meters and 50 W on 10 meters. The threshold for all VHF bands is 50 W. On UHF, the threshold level is 70 W on 70 cm, 150 W on 33 cm, 200 W on 23 cm, and 250 W on 13 cm and above. Stations operating at or below these respective power levels are categorically excluded from having to perform a routine RF radiation evaluation. However, all stations, regardless of power level, still must comply with the RF exposure limits. OET Bulletin 65 and the FCC Second Memorandum Opinion and Order are available at <http://www.fcc.gov/oet/dockets/et93-62/>. More details on the FCC's latest

announcement on RF safety will appear in the October issue of QST. All stations, new or old, must be in compliance with the new regulations no later than Sept. 1, 2000. This date must be met whether a Form 610 has been filed previously or not.

The San Diego Miguel X-Band beacon on about 10368.03 MHz failed Tuesday 8/26 due to what appears to be a power supply problem (+17 VDC supply reading +8 VDC). The symptom was that the carrier was on continuously and had some 60 Hz modulation. Chuck, WB6IGP noticed the problem Tuesday evening and it was operational during the Monday night Microwave net. The beacon had have the beacon operational again early next week. 73 - Kerry N6IZW -

The San Diego Mt. San Miguel X-Band Beacon is back on the air thanks to Jerry, WA6VLF who repaired the power supply. As of last night it was operating at a frequency of 10368.025 MHz. The beacon consists of a Frequency West Brick feeding a 6 slot horizontally polarized wave guide Omni-directional antenna through a Gyroline modulator to key the beacon CW identifier with the call WB6IGP. The RF power to the antenna is about +14 dBm. The same antenna is shared with a +10 dBm GUNN oscillator running at 10248 MHz with an FM modulated ID with the call N6IZW. The beacon is collocated with the X-Band repeater at 2500' in DM12MQ. The repeater is a wideband (10+ MHz) linear amplifier system with similar antennas and 90 dB of amplifier gain capable of supporting all modes of communication. The repeater operating bandwidth is centered around 10368 Mhz. 73 - Kerry N6IZW -

To ATVers and Microwave Enthusiasts: The 10.425 GHz FM video input to the Black Mt. (Palo Alto CA)

ATV repeater is now in service! Dust of your Gunplexers and join the fun! Repeater details: Input: 10.425 ghz, Polarization: H, RX antenna: Slot with 180 degree pattern, 12 dB gain approx., RX NF: 3 dB, RX BW: 30 mhz, Deviation: 10.75 mhz, Audio subcarrier: 5.8 MHz (+/-75 KHz Dev), Pre-emphasis: CCIR 405-1 525 line, Output: 2429.25 MHz VSB AM, Polarization: V, Normal Broadcast standards apply. For more information on the W6YX Black Mtn ATV repeater visit:

<http://www-w6yx.stanford.edu/~stevem/atv/> Steve Muther WF6R stevem@area.com

stevem@w6yx.stanford.edu

After Three years of work, K6GZA and I placed 10 Ghz Mt. Vaca beacon into operation last Sunday, Sept. 14 at 1610 hrs PDST. Call Sign: W6ASL/BCN, Frequency: 10368.325, Grid Square: CM88WJ, Power: 1 Watt, Antenna: 10 dB Slot Omni H-Poliz, Elevation: 2704 Feet AMSL. Frequency is now at -10 Hz from target. After burning in on Ron K6GZA's bench for 9 months, the drift rate was found to be +1.5 Hz per month. Frequency control was achieved by using WA6CGR's PLL system driven by a TRACOR frequency standard at 5 Mhz. The Beacon frequency of 10368.325 was coordinated with SBMS several years ago. Certificates will be available for signal reports forwarded to me via E-Mail...73...jim W6ASL

I broke out my new digital camera and took some pictures during the Sept 20th 10 GHz contest last weekend. These were at several places in the San Francisco bay area. You can see some of them on my website... <http://www.dnai.com/~rexa> - Rex, KK6MK

WB7VVD and KC7AED make 119.6 mile HeNe laser contact. By Harold Sibert KC7AED

Sunday 9/21/97 a group of us set out to see if we could make a 119 mile laser contact. We had already made several 20 and 30 mile contacts, then found an optical path of 119 miles between Four Peaks, East of Phoenix, and Smith Peak, West of Wickenburg AZ. Greg N7VUB and I (KC7AED) went to Four Peaks in DM 43, Ward WB7VVD and Adam KC7PCV went to Smith Peak in DM 34. We setup the Global Positioning System's, lasers and receivers at both ends and established communication on 2 meter SSB. As soon as it was dark enough I started sweeping the laser through the area where we thought Smith Peak was. At 02:15 GMT Ward saw a flash from our laser and with fine tuning we were able to get a solid sighting by 02:30. We set up the beam modulator and got solid, steady tone out of the receiver on the Smith peak end. After repeating the process at the other end, we had steady tone at both ends. Once we had tone at both ends, we were ready to send CW. Our equipment uses

a rotary solenoid driven by a keyer to interrupt the laser beam to provide CW communications. The first part of the CW contact was from KC7AED to WB7VVD at 03:10 GMT contact was concluded at 03:20 Later contacts were also worked by N7VUB and KC7PCV. Conditions deteriorated somewhat later in the evening as the air became hazier but signals remained clear throughout the contact.

The transmitting equipment at each end consisted of: A 5 MW Helium Neon laser (red), 12 vdc electric fan (the modulator), 12 vdc rotary solenoid (beam interrupter), Keyer /Bencher paddles.

The laser and power supply are mounted on a micrometer Azimuth/Elevation adjustable aluminum stage that allows .001 inch adjustments of the laser beam. This assembly is attached to a fluid tripod head mounted on a 5 gallon bucket filled with concrete for stability. The fan and solenoid assembly sits on a tripod in front of the laser. The receiving equipment at each end consisted of: A 16 inch Fresnel lens , A photo multiplier tube and power supply, An audio amplifier, filter and speaker. Everything is mounted in a cardboard tube large enough to enclose the lens and long enough to accommodate the focal distance of the lens. The cardboard tube we used is from a construction supply house and is normally used to cast concrete. The tube is painted flat black inside to reduce reflections and is also mounted on a 5 gallon bucket filled with concrete. We are awaiting confirmation that this distance constitutes a new HeNe laser record. The strength of the signal and the relative ease with which we made the contact, convinces us that much longer contacts are possible with our present equipment.

73's

Bill